

21 The Rural Rumble: Gamification and Simulation to Improve Resident Skills for Low-Resource Emergency Medicine Practice

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Background: A critical access center is a hospital with 35 miles from another hospital. Despite their small size, they serve a large proportion of the American population. >40% of United States EDs are located in rural communities. Over the last two decades, rural ED visits have increased by 50%. Many learners may receive no exposure to healthcare in rural areas and thus are not familiar with the unique opportunities and challenges associated with practicing in these areas including high acuity low opportunity (HALO) procedures. We found that simulation is an effective way to bridge this gap.

Educational objectives: Provide an overview of the healthcare needs of rural communities and the importance of healthcare professionals receiving training to practice in these settings while also discussing the design of simulation scenarios that effectively emulate the unique challenges seen when working in rural environments with minimal resources.

Curricular design: Rural Rumble is a gamified simulation. Scenarios included epidural hematoma, obstetric arrest, neonatal resuscitation, upper GI bleeding, and testicular torsion. HALO procedures were included, exploring low-cost, low-fidelity trainers allowing learners the opportunity to develop skills such as Burr holes, perimortem c-section, balloon tamponade, and manual detorsion. Learners faced challenges such as the inability to transfer patients, limited specialist assistance, and lack of physical resources that required problem-solving to navigate rural medicine obstacles for patient care. Pre & Post-tests were also included to assess learner knowledge and satisfaction.

Impact/Effectiveness: 16 EM residents took part in the educational activity. The pretest mean score was 70.8% and the posttest mean score was 84.4%. The difference between the pretest and posttest means was statistically significant, $t(15) = 3.64, p < 0.005$ (two-tailed), indicating an improvement in performance following the intervention. Additionally, learners indicated they “strongly agreed” with statements regarding their motivation, engagement, challenge, and overall effectiveness of this educational innovation (87.5%, 93.8%, 93.8%, and 100% respectively).

22 Cruise Ship Catastrophe: An Escape Room Simulation for Mass Casualty and Disaster Medicine Training

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Background: Mass casualty incidents (MCIs), although rare, are critical elements of emergency medicine practice. Effective management requires proficiency in triage principles, efficient utilization of limited resources, and strong leadership skills. Due to the infrequency of these events, they are seldom encountered during residency training. This educational innovation leverages an escape room format to create an MCI on a sinking cruise ship, providing an immersive learning environment to engage trainees while teaching essential concepts of MCI, event medicine, and disaster management.

Objectives: By the end of this session, residents will be able to: manage patients they may encounter in a real-life event medicine situation; formulate a plan to efficiently use limited resources; demonstrate leadership and teamwork to effectively treat patients outside of the hospital

Curricular Design: This was an interactive escape room of a cruise ship disaster scenario. Teams assumed the role of the ship’s medical director and worked in teams to solve a series of interconnected puzzles related to MCI, event, and disaster medicine. Each puzzle tied to specific objectives, including triage, prioritizing care, and resource management. Teams were timed, and the first team to “escape” was declared the winner. Throughout the activity, teams were faced with realistic scenarios (e.g. managing limited supplies, coordinating rescue efforts, and providing care to critically injured patients). The escape room format fostered engagement and encouraged active participation, while facilitated debriefings reinforced key learning points and provided immediate feedback.

Effectiveness: A total of 44 emergency medicine residents participated in the educational session, with 43 completing post-session surveys. 93% of respondents “strongly agreed” that the session better motivated them to learn compared to other educational methods. Nearly all participants (97.7%) reported feeling more prepared to handle a real-life MCI or disaster situation as a result of the session. These findings suggest that integrating gamified, escape room-style games into emergency medicine education can effectively enhance resident preparedness and competency in managing MCIs and other complex emergency scenarios.